

WHAT IS CLAIMED IS:

- 1 1. An adjustable clamp assembly for securing cylindrical
2 members of various size to an elongate U-shaped support channel, the clamp
3 comprising:
4 a unitary first clamp half formed from plastic having a first end
5 slidably engageable to the support channel, a second end spaced apart from the
6 channel, and an inner surface for mating engagement with the cylindrical member;
7 a unitary second clamp half formed from plastic having a
8 corresponding first end slidably engaged to the support channel, a corresponding
9 second end, and an inner surface opposing the first clamp half inner surface,
10 an attachment region formed at the second end of each of the first and
11 second clamp halves for coupling the first and second clamp halves together; and
12 a fastener cooperating with the first and second clamp half attachment
13 regions to effectuate fastening engagement between the first and second clamp
14 halves;
15 wherein the cylindrical member is interposed between the first and
16 second clamp half inner surfaces and each clamp half being slidably movable along
17 a channel axis toward one another until the opposing inner surfaces matingly engage
18 the cylindrical member to sufficiently secure the cylindrical member to the U-shaped
19 channel.
- 1 2. The adjustable clamp assembly of claim 1, wherein the inner
2 surface of each clamp half comprises at least one grip bump shaped and positioned
3 to provide size adjustment capability for cylindrical members of various size.
- 1 3. The adjustable clamp assembly of claim 2, wherein the
2 cylindrical members of various size make direct contact with at least the support
3 channel, the at least one grip bump of the first clamp half, and the at least one grip
4 bump of the second clamp half.

1 4. The adjustable clamp assembly of claim 1, wherein the inner
2 surface of each clamp half comprises a primary contact face and a secondary contact
3 face.

1 5. The adjustable clamp assembly of claim 4, wherein the
2 primary contact face of each clamp half is generally arcuate having a chord defining
3 a primary reference plane, the secondary contact face of each clamp half is generally
4 planar and lies in a secondary reference plane, wherein the primary reference plane
5 intersecting the secondary reference plane forms an interior angle generally facing
6 the cylindrical member.

1 6. The adjustable clamp assembly of claim 4, wherein the
2 primary contact face of each clamp half is generally planar and lies in a primary
3 reference plane, the secondary contact face of each clamp half is generally arcuate
4 having a chord defining a secondary reference plane, wherein the primary reference
5 plane intersecting the secondary reference plane terms an interior angle generally
6 facing the cylindrical member.

1 7. The adjustable clamp assembly of claim 4, wherein the
2 primary contact face of each clamp half is generally arcuate having a chord defining
3 a primary reference plane, the secondary contact face of each clamp half is generally
4 arcuate and having a chord defining a secondary reference plane, wherein the
5 primary reference plane intersecting the secondary reference plane forms an interior
6 angle generally facing the cylindrical member.

1 8. The adjustable clamp assembly of claim 4, wherein the
2 cylindrical member is engageable with at least the first and second clamp half
3 primary contact faces when the clamp is slidably adjusted to secure the cylindrical
4 member to the support channel.

1 9. The adjustable clamp assembly of claim 8, wherein the
2 cylindrical member is further engageable with the first and second clamp half

3 secondary contact faces when the clamp halves are urged close enough together to
4 effectively lift the cylindrical member away from the support channel.

1 10. The adjustable clamp assembly of claim 1, wherein the first
2 clamp half is interlockingly engageable with the second clamp half.

1 11. The adjustable clamp assembly of claim 10, wherein the first
2 clamp half comprises at least two ribs and the second clamp half comprises at least
3 one rib, the first clamp half ribs being generally aligned with the second clamp half
4 ribs such that the first and second clamp half ribs can be interleaved relative to one
5 other when the clamp halves are urged together along the channel axis.

1 12. The adjustable clamp assembly of claim 11, wherein the first
2 clamp half ribs contain alignment grooves and the second clamp half ribs contain
3 corresponding alignment tabs which mate with the alignment grooves.

1 13. An adjustable clamp assembly for securing cylindrical
2 members of various size to an elongate U-shaped support channel without the need
3 for a cushion insert disposed between the clamp and the cylindrical member, the
4 clamp comprising:
5 a unitary plastic first clamp half having a first end slidably engageable
6 with a support channel along a channel axis, a second end spaced apart from the
7 channel, and an inner surface having at least one grip bump shaped and positioned
8 for mating engagement with cylindrical members of various size;
9 a unitary plastic second clamp half having a corresponding first end
10 slidably engageable with the support channel along the channel axis, a
11 corresponding second end, and an inner surface opposing the first clamp half inner
12 surface having at least one grip bump shaped and positioned for mating engagement
13 with cylindrical members of various size, each clamp half having an attachment
14 region formed at the second end for coupling the first and second clamp halves
15 together; and
16 a fastener cooperating with the attachment regions to effectuate
17 fastening engagement between the first clamp half and the second clamp half;

18 wherein the cylindrical members of various size can be interposed
19 between the first and second clamp half inner surfaces such that each clamp half is
20 slidably movable toward one another along the channel axis until the at least one
21 grip bump of the first and second clamp halves directly engage with cylindrical
22 members of various size sufficiently securing the cylindrical members of various
23 size to the support channel.

1 14. The adjustable clamp assembly of claim 13, wherein the
2 cylindrical members of various size are secured to the support channel by at least
3 three contact points, the at least three contact points comprising the at least one grip
4 bump of the first clamp half, the at least one grip bump of the second clamp half,
5 and the support channel.

1 15. The adjustable clamp assembly of claim 13, wherein the first
2 end of each clamp half comprise a neck and shoulders for cooperating with the
3 support channel to effectuate sliding engagement.

1 16. The adjustable clamp assembly of claim 13, wherein the
2 attachment region of each clamp half comprises an aperture for at least partially
3 inserting the fastener therethrough to couple the first clamp half to the second clamp
4 half.

1 17. The adjustable clamp assembly of claim 16, wherein the
2 fastener comprises a nut and bolt assembly.

1 18. The adjustable clamp assembly of claim 16, wherein the first
2 clamp half aperture comprises a boss for housing a nut, the boss having a detent
3 formed therein for snap fit retention of the nut, the second clamp half aperture
4 having a finger for retaining a bolt.

1 19. An adjustable clamp assembly for securing cylindrical
2 members of various size to an elongate U-shaped support channel, the clamp
3 comprising:

4 a unitary first clamp half formed from plastic having a first end
5 slidably engageable with a support channel along a channel axis, a second end
6 spaced apart from the channel, at least two ribs, and an inner surface matingly
7 engageable with the cylindrical members of various size, the inner surface including
8 a primary contact face and a secondary contact face;

9 a unitary second clamp half formed from plastic having a
10 corresponding first end slidably engageable with the support channel along the
11 channel axis, a corresponding second end, at least one rib interleavable with the at
12 least two ribs of the first clamp half, and an inner surface opposing the first clamp
13 half inner surface and having a primary contact face and a secondary contact face,
14 each clamp half having an attachment region formed at the second end for coupling
15 the first and second clamp halves together; and

16 a fastener cooperating with the attachment regions to effectuate
17 fastening engagement between the first clamp half and the second clamp half;

18 wherein the cylindrical members of various size are interposed
19 between the first and second clamp half inner surfaces such that each clamp half is
20 slidably movable toward one another along the channel axis until the opposing inner
21 surfaces matingly engage the cylindrical members of various size, the first clamp
22 half interlockingly engageable with the second clamp half for securing cylindrical
23 members of various size.

1 20. The adjustable clamp assembly of claim 19, wherein the first
2 clamp half ribs contain alignment grooves and the second clamp half ribs contain
3 corresponding alignment tabs which mate with the alignment grooves when the
4 clamp halves are urged together along the channel axis.